METHOD FOR ISSUING INSTALLATION KEY

AND

SYSTEM THEREOF

5   BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to the installation of a software. More particularly, the invention relates to a method for issuing installation key and

10   the system thereof.

Related Background Art

For the conventional method for installing a software, there is the one called the key input method.

A first method thereof is, in general, such as to

15   notify the user of the ID by attaching a seal having a specific ID to a package of a CD-ROM or the like when software is sold, and then, when the user inputs such ID by means of keys for installation, the legality of the use of the software is determined in accordance

20   with the ID thus inputted.

Also, as a second method, there is the font installer of TypeOnCall of Adobe Systems. Here, the installer generates the ID that identifies a personal computer. The user contacts a sales company on this ID

25   and receives the installation ID for the payment thereof. With this installation ID being key inputted into the installer, fonts or software can be installed

on that particular computer.

Also, as a third method, there is the one disclosed in the specification of Japanese Patent Laid-Open Application No. 10-240520. This system is

5   arranged to determine the legality of use by burying personal information, such as a credit card number, in a software, which is compared with the key input, and if identified successfully, the installer keeps it and performs installation.

10   However, for the conventional first method described above, IDs are changed per user by means of the attachment of a seal or the like having the ID printed thereon. If this ID should be widely known through network or the like, the system becomes

15   insufficient in function as means for determining the legality of use. It becomes subjected to the invitation of irregular software use by non-authorized users with ease.

Also, for the conventional second method described

20   above, such key is issued for a personal computer, and only on a specific computer, the installation is possible. Third method is good enough for the legitimate use for a specific computer. However, should such designated computer be in trouble to

25   necessitate the use of some other computer, the same key is no longer useful for installation. In such a case, there is a need for reissuing some other key to

serve the purpose.

Also, for the conventional third method described above, while processing the data in software so as to bury personal information, such as a credit card

5 number, in the software, there is a possibility of the leakage of personal information should the software be analyzed. There is encountered a problem with respect to the aspect of maintaining the security in this respect.

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SUMMARY OF THE INVENTION

Now, therefore, it is an object of the present invention to provide the system of issuing an installation key for software, which is capable of

15 determining the legitimate use satisfactorily, and also, executable by the same procedures without depending on any designated computer, as well as to provide a method for issuing an installation key for software.

20 Also, it is another object of the invention to provide the system of issuing an installation key for software, which is capable of minimizing the possibility of the leakage of personal information used for determining the legitimate use of the software, as

25 well as to provide a method for issuing an installation key for software.

According to one aspect, the present invention

which achieves these objectives relates to a method for
issuing an installation key to a software user for
installing software on a computer, which comprises the
steps of notifying from the user to a sales company of
5   the ID information thereof; communicating the notified
ID information to an authorizing agency form the sales
company to request the confirmation of the user having
notified the ID information; confirming the user in the
authorizing agency in accordance with the notified ID
10   information to communicate the result of confirmation
to the sales company; and producing in the sales
company an installation key uniquely corresponding to
the user on the basis of the ID information for issuing
the installation key to the user if the user is
15   confirmed by said authorizing agency to be the
legitimate user.

According to another aspect of the present
invention which achieves these objectives related to a
system for issuing an installation key for installing
20   software on a computer which comprises means for
acquiring ID information from a user; means for
communicating the acquired ID information to an
authorizing agency to confirm the user having notified
the ID information; and means for producing an
25   installation key uniquely corresponding to the user in
accordance with the ID information for issuing the
installation key to the user if the user is confirmed

by the authorizing agency to be the legitimate user.

According to still another aspect, the present invention which achieves these objectives relates to a program of installation key issuance for controlling a computer to issue an installation key for installing software on a computer, which comprises the codes for causing the computer to perform a step of acquiring ID information from a user; a step of communicating the acquired ID information to an authorizing agency to confirm the user having notified the ID information; and a step of producing an installation key uniquely corresponding to the user in accordance with the ID information for issuing the installation key to the user if the user is confirmed by the authorizing agency to be the legitimate user.

According to a further aspect, the present invention which achieves these objectives relates to an installing method for installing software on a computer system which comprises the steps of displaying the installation screen of software by actuating an installer; inputting the installation key issued by a sales company and the ID information of the computer user into the input columns on the installation screen; and producing a key uniquely corresponding to the computer user in accordance with the ID information for comparison with the installation key, and executing the installation of software if these are in agreement.

According to a further aspect, the present invention which achieves these objectives relates to an installation program for controlling the computer of a computer system for installing software which comprises

5   the codes for causing the computer to perform a step of displaying the installation screen of software; a step of inputting the installation key issued by a sales company and the ID information of the computer user into the installation screen; and a step of producing a

10   key uniquely corresponding to the computer user in accordance with the ID information for comparison with the installation key, and executing the installation of the software if these are in agreement.

Other objectives and advantages besides those

15   discussed above shall be apparent to those skilled in the art from the description of a preferred embodiment of the invention which follows. In the description, reference is made to accompanying drawings, which form a part thereof, and which illustrate an example of the

20   invention. Such example, however, is not exhaustive of the various embodiments of the invention, and therefore reference is made to the claims which follow the description for determining the scope of the invention.

25   BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a structural view which shows a system for issuing installation key for a software, and an

installation system in accordance with one embodiment of the present invention.

Fig. 2 is a view which shows the issuance of software installation keys, and the installation procedures.

Fig. 3 is a view which shows an installer input displayed on a screen.

Fig. 4 is a flowchart which shows the procedures of installing a software.

Fig. 5 is a flowchart which shows the procedures of uninstalling a software.

Fig. 6 is a view which shows the execution of installation displayed on a screen when a software is installed.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Hereinafter, with reference to accompanying drawings, the detailed description will be made of one preferred embodiment in accordance with the present invention.

Fig. 1 is a view which illustrates the communication mode between a software user and a software sales company, and the systematic structure of payment of the software fees.

A computer system (PC) 10 used by a software user, a computer system 20 used by a software sales company, and a computer system 30 used by a credit company

should preferably be connected with each other by a
network (not shown) to form the system embodying the
present invention. It is possible to adopt for these
systems a computer of known structure such as

5   comprising a CPU; a ROM serving as a main storage
device; a HDD and a FDD serving as auxiliary storage
devices; an RAM serving as the work area for the CPU
and a provisional data storage area; a communication
I/F used for exchanging data with the outside; a key

10   board and a mouse serving as input devices; and a CRT
display (or a liquid crystal display) as image
indication device.

The computer system 20 and the computer system 30
can be connected on line as a private line. Here, the

15   computer system 10 and the computer system 20 are not
necessarily made executable on line. It should be good
enough if only the software user and the software sales
company can communicate with each other on required
information by use of a telephone, a facsimile

20   equipment, or some other communication set up.

With the mutual communications of the kind, the
software user presents to the software sales company
the credit information which will be describe later.
Then, when the computer system 20 recognizes the input

25   of such information, the computer system 20 issues
installation keys, which are notified from the software
sales company to the software user. Thus, only when

the information notified to the software user is
inputted into the computer system 10, it becomes
possible to instal that particular software.

The payment of the software is charged by the
5   credit company directly to the bank account or the like
(not shown) of the software user. The sales company
transmits the payment to the software sales company
after deducting a commission.

Now, with reference to Fig. 2, the description
10   will be made of the features of the issuance procedures
of an installation keys in accordance with the system
that adopts the mode described above.

The user cannot install a software or use it
unless he is provided with installation keys even if he
15   has already secured the software by means of a CD-ROM
or by delivery or the like using on line. At first,
therefore, the user requests the software sales company
of the issuance of keys using the communication set up
(S201). Here, more specifically, the credit
20   information, such as the credit card number of a credit
card issued by the credit company; the name of the
credit card holder indicated alphabetically; and the
validity of the credit card to be used, is notified.
These items of credit information verify that the user
25   has been approved by the credit company to use such
credit card.

Next, the software sales company inputs the credit

information thus notified and the sales price of the
software in the computer system 20 to communicate on
line with the computer system 30 of the credit company
who is the authorizing agency, and requests the credit
5   company to confirm whether or not the user is a
legitimate user of the card (S202).

The computer system 30 of the credit company
determines the validity of the card by identifying the
user of the credit card. Then, in accordance with the
10   validity thus confirmed and the limit of payment
established in advance against the amount of sales, the
use of the credit card is authorized. Then, with the
authorization, the use thus approved is notified to the
computer system 20 of the software sales comply by use
15   of on line communication (S203).

The soft sales company can confirm the user on the
bases of the approval of the credit company given to
the use of the card. The computer system 20 works out
a calculation as described later in accordance with the
20   credit information, such as the confirmed credit card
number, holder's name, and validity, and then, produces
installation keys formed by alphanumeric characters in
12 digits, for example, (S204). The software sales
company issues such installation keys and notifies the
25   user accordingly by use of the aforesaid communication
set up (S205).

Receiving the installation keys thus issued from

the software sales company, the user can actuate the
installer for the intended installation.   In other
words, on the installation input display on a screen
300 as shown in Fig. 3, the respective items of the
5   credit information, the installation keys 31 thus
received; the credit card number 32; the name 33 of the
credit card holder; and the validity 34 given to the
use of the card, are inputted in each of the designated
columns, and then, the execution button 35 is clicked
10   (S206).   Thus, the installation is performed in
accordance with the procedures to be described later
(S207).

Fig. 4 is a flowchart which shows in detail the
procedure of the installation key preparation in the
15   step S204 in Fig. 2.   As shown in Fig. 4, the hashing
technique is used for preparing the installation keys
for the present embodiment.

In step S401, the credit card number, the
alphabetically expressed name, and the validity are
20   digitized to produce an integer of 32 digits.   Of the
32 digits, the high order 16 digits indicate the credit
card number, and the following 12 digits are allocated
for producing the mane, and further, the following two
digits are used for the indication of the month in
25   which the validity expires.   The last two digits stand
for the last two digits of the dominical year in which
the validity expires.   If the holder's name is "X Y Z",

for example, the hexadecimal ASCII code thereof is
"5820595A". This code stands for "1478515034" when
decimalized, and then, the aforesaid 12 digits become
"001478515034".

5   Therefore, assuming that the credit card number is
"1234-5678-9012-3456", the holder's name is "X Y Z",
and the validity expires in February, 2010, the integer
of 32 digits is obtained as follows:

        "12345678901234560014785150340210".

10   In step S402, the above-mentioned integer of 32
digits is given a designated calculation to work out a
36-adic number of eight digits. Form this 36-adic
number, the check sum of four-digit 36-adic number is
produced. Then, from both of them, an installation key

15 of 12 digits is produced, which is dedicated for the
use of that particular user. Here, at first, the
remainder is obtained by dividing the integer of 32
digits by the integer of 12 digits "123456789013" which
is prepared in advance for the system, and then, the

20 remainder thus obtained is converted into a 36-adic
number. This divisor is used only for reducing the
digit numbers. Therefore, the divisor is not
necessarily limited to this value. It is good enough
if only one designated value should be prepared for the

25 system use here.

        Now, the 36-adic number is such as to use 0 to 9
and A to Z as a numerical value, respectively, and from

0 to 9 are the same as the decimal numbers, and a
letter A indicates 10 in terms of the decimal number.
Thus, a letter Z indicates 35 likewise. Now, for
example, 10 in terms of the 36-adic number is

5 equivalent to 36 in terms of the decimal number. Then,
ZZ of 36-adic number corresponds to 1,295 in terms of
the decimal number. Therefore, the aforesaid
remainders represent "122463224728" in decimal, and
then, "1K9BFWYQ" is obtained if expressed in the 36-

10 adic number.

This 36-adic number is divided into the higher
order four digits of "1K9B" and the lower order four
digits of "FWYQ", and the value of each digit is added
to each other. Then, the value thus obtained by

15 addition is given a check sum calculation so that each
of them becomes a multiple of 36. For example, since
the most significant digit is 1 and 15 (F corresponds
to 15) in terms of decimal number, the check sum
thereof is 20 in decimal, that is, K in 36-adic number.

20 Likewise, K is induced from the K and W, J from 9 and
Y, and 9 from B and Q, hence obtaining a check sum code
of "KKJ9" in four characters (digits).

In continuation, this check sum code of "KKJ9" is
added to the head of the aforesaid 36-adic number of

25 "1K9BFWYQ" in order to obtain the installation keys of
"KKJ91K9BFWYQ". Since this value is obtained from the
credit information of 32 digits the amount of which is

compressed to 12 digits using the remainders of a division, it is impossible to induce the original credit information having a high secrecy, such as a credit card number, the holder's name, among some

5   others, even if a third party should steal this installation key on the network. In this way, the leakage of personal information can be prevented.

Fig. 5 is a flowchart which shows the procedures of installation of a software using an installer in the

10   step S207 in Fig. 2.

The user uses the computer system 10 to inputs the credit card information, such as the installation key 31, the credit card number 32, the credit card holder's name 33, and the validity thereof 34, along with the

15   installation input display on a screen 300 (see Fig. 3), and clicks the execution button 35. Then, the installer obtains these items of information in step S501.

In step S502, whether or not the check sum is

20   correct for the installation key is determined. If there is no agreement, it is interpreted that the user is illegal, who is not authorized. The process proceeds to step S505 where an error indication (not shown) is displayed on a screen, and the precess

25   terminates. If agreed, it is determined that the use is correctly authorized, and the process proceeds to step S503. In the step S503, the installation key is

worked out in the same procedures as in the step S402 as described above, beginning with the credit card number, the credit card holder's name, and the validity obtained in the step S501.

5   In the step S504 that follows, the installation key obtained in the step S501 is compared with the installation key obtained by calculation in the step S503, and if there is no agreement, it is interpreted that the use is illegal, who is not authorized, and the
10   process proceeds to step S505 where an error is displayed (not shown) on a screen, and the process terminates. While the non-existent illegal user is excluded by making such confirmation as this, the correct user who is in actual existence is acknowledged
15   if these installation keys are in agreement, and the process proceeds to step S506 where the installation of the software begins. When the installation is completed, the process terminates.

When the step S506 is executed to enable the
20   installer to install the software, the screen 600 shown in Fig. 6 appears on the display device of the computer system 10 to indicate that the installation is being executed.

In accordance with the present embodiment, the
25   sales company issues an installation key after having inquired the credit company of the approved ID of the credit card held by the user and the related

information currently available. There is no need for

keeping the approved ID on software. Then, it is

possible to compare the approved ID and installation

key at the time of actuating the installer in order to

5   determine the legality of software use. Therefore, the

legality of the use can be determined satisfactorily,

while it becomes unnecessary to take any key issuance

procedures anew by the same user who should carry out

the same installation on another computer due to the

10   trouble or the like that necessitates the original

computer to be replaced. In this way, it is possible

to provide an installer capable of avoiding problems

taking place when a software is processed or analyzed.

In accordance with the embodiment described above,

15   the ID information of the user of a software is

notified to the sales company who communicates with an

authorizing agency to confirm whether or not the user

who has notified the ID information is a legitimate

user. If affirmative, the sales company produces an

20   installation key uniquely corresponding to the user

based on the ID information thus verified, and issues

the installation key to the user. Therefore, the

illegal use of the software by any non-existent user

can be prevented, and even if the computer becomes out

25   of order, there is no need for the reissuance of the

installation key. The same user can use on another

computer the installation key thus issued for

installation of such software.

Also, the installation key is produced by carrying out a designated operation on either one of the credit card number, the holder's name, and the validity of use as ID information, thus preventing the ID information from being known to the third party.

In this respect, the present invention may be applicable to the system which is formed by a plurality of equipment (such as a computer main body, an interface equipment, a display, among some others) or applicable to the system formed by single equipment.

Also, the present invention is construed to include in the scope thereof the programming codes of a soft wafer which implement the functions of the embodiment described earlier, and which are provided for a computer in an apparatus or a system connected with various devices arranged for the implementation thereof, hence operating each of the devices by the computer (CPU or MPU) in such system or apparatus in accordance with the programming codes thus stored. In this case, the aforesaid programming codes themselves of the software implement the functions of the embodiment. Therefore, the programming codes themselves, means for supplying such programming codes to a computer, that is, the storage medium that has stored the programming codes, for example, are construed to constitute the present invention.

As a storage medium for storing such programming codes, it is possible to use a floppy disc, a hard disc, an optical disc, an optomagnetic disc, a CD-ROM, a CD-R, a magnetic tape, a non-volatile memory card, a

5 ROM, or the like, for example.

Also, the present invention is construed as a matter of course to include not only the case where the functions of the aforesaid embodiment is implemented by a computer that executes the programming codes supplied

10 thereto, but also, the case where the aforesaid embodiment is implemented by such programming codes in corporation with the operating system (OS) that operates on the computer or with other application software or the like.

15 Further, the present invention is of course construed to include the case where the programming codes thus supplied are once stored on the expanded functional board or on the memory provided for the expanded functional unit connected with the computer,

20 and then, the actual processes are executed partly or totally by the CPU or the like provided for such expanded functional board or functional storage unit in accordance with the instructions contained in the programming codes, hence implementing the functions of

25 the aforesaid embodiment.

When the invention hereof is made applicable to any one of the aforesaid storage media, it should be

good enough to store programming codes in the storage
thereof corresponding to the flowcharts described
earlier.

Although the present invention has been described
5   in its preferred from with a certain degree of
particularity, many apparently widely different
embodiments of the invention can be made without
departing from the spirit and the scope thereof. It is
to be understood that the invention is not limited to
10   the specific embodiments thereof except as defined in
the appended claims.